Health Advisory:

Updated Guidelines for the Anti-SARS-CoV-2 Monoclonal Antibody Treatment of COVID-19

April 13, 2021

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Health Advisory
April 13, 2021

FROM: **RANDALL W. WILLIAMS, MD, FACOG**
DIRECTOR

SUBJECT: **Updated Guidelines for the Anti-SARS-CoV-2 Monoclonal Antibody Treatment of COVID-19**

SARS-CoV-2, virus causing coronavirus disease 2019 (COVID 19), has been evolving over time, resulting in genetic variation in the population of circulating viruses across the world, including the United States. Some of those variations in viral genome can cause resistance to one or more of the monoclonal antibodies (mAb) therapies authorized to treat COVID-19. The ongoing surveillance of human and sewage samples by the Missouri Department of Health and Senior Services (DHSS) indicates rise in variant SARS-CoV-2 in Missouri, similar to other states. This DHSS Health Advisory urges health care providers in Missouri to follow newly updated COVID-19 mAB treatment guidelines issued by the National Institute of Health (NIH).

According to the DHSS surveillance of variant viruses, many of the noted variants including 159 cases of B.1.1.7 (UK origin); 4 cases of B.1.427/B.1.429 (California origin) and 1 case each of B.1.351 (South African origin) and B.1.526 (New York origin) have been identified in Missouri. During the four-week period ending March 13, 2021, the Centers for Disease Control and Prevention (CDC) reports 7.4% of clinical specimens sequenced from Missouri for surveillance purposes were the B.1.1.7, 6.0% were the B.1.427/B.1.429, and 0.2% were B.1.351 variants. As observed in other states, the number and proportion of B.1.1.7 cases in Missouri continues to increase. DHSS has also conducted surveillance through testing community wastewater, which is yielding informative results. Recent sewershed analysis showed that 16 of 18 locations with sufficient genetic material for testing have likely presence of B.1.1.7, 2 of 18 having B.1.427/B.1.429, and only 2 locations having no known variant of concern detected. Although sequencing of SARS-CoV-2 genome from the sewage is a new science, it is showing promising results in being able to provide an early indication of mutations of concern.

Anti-SARS-CoV-2 monoclonal antibodies target SARS-CoV-2 spike protein and block virus entry into cells. Emergency Use Authorization (EUA) 90 initially authorized emergency use of **bamlanivimab** (*Eli Lilly*) alone for the treatment of mild to moderate coronavirus disease 2019 (COVID19) in adults and pediatric patients (12 years of age and older weighing at least 40 kg) with positive results of direct SARS-CoV-2 viral testing, and who are at high risk for progressing to severe COVID-19 and/or hospitalization. Due to the increase in circulating viral variants in the United States, the FDA requested that manufacture conduct cell culture neutralization studies to assess the activity of **bamlanivimab** against these variants, and/or amino acid substitutions found in these variants. *Eli Lilly* provided pseudovirus data for spike protein substitutions found in variants B.1.1.7 (UK origin), B.1.351 (South Africa origin), P.1 (Brazil origin), B.1.427/B.1.429 (California origin), and B.1.526 (New York origin). Obtained data indicates major reductions in susceptibility for all of the variants studied, except for the one originating in the UK (Table 1).

Table 1. Pseudovirus Neutralization Data for SARS-CoV-2 Variant Substitutions with Bamlanivimab Alone[1]

Lineage with Spike Protein Substitution	Key Substitutions Tested[a]	Fold Reduction in Susceptibility
B.1.1.7 (UK origin)	N501Y	no change[b]
B.1.351 (South Africa origin)	E484K	>2,360[c]
P.1 (Brazil origin)	E484K	>2,360[c]
B.1.427/B.1.429 (California origin)	L452R	>1,020[c]
B.1.526 (New York origin)[d]	E484K	>2,360[c]

[a] For variants with more than one substitution of concern, only the one with the greatest impact on activity is listed.

[b] No change: <5-fold reduction in susceptibility.

[c] No activity was observed at the highest concentration tested. **Bamlanivimab** alone is unlikely to be active against variants from this lineage.

[d] Not all isolates of the New York lineage harbor the E484K substitution (as of February 2021).

For *Eli Lilly's* combination therapy of **bamlanivimab** and **etesevimab**, the treatment fared better against all of the variants than **bamlanivimab** alone (Table 2).

Table 2. Pseudovirus Neutralization Data for SARS-CoV-2 Variant Substitutions with Bamlanivimab and Etesevimab Together[2]

Lineage with Spike Protein Substitution	Key Substitutions Tested[a]	Fold Reduction in Susceptibility
B.1.1.7 (UK origin)	N501Y	no change[b]
B.1.351 (South Africa origin)	K417N + E484K + N501Y	>45[c]
P.1 (Brazil origin)	K417T + E484K + N501Y	>511[c]
B.1.427/B.1.429 (California origin)	L452R	7.4
B.1.526 (New York origin)[d]	E484K	17

[a] For variants with more than one substitution of concern, only the one(s) with the greatest impact on activity is(are) listed.

[b] No change: <5-fold reduction in susceptibility.

[c] No activity was observed at the highest concentration tested. **Bamlanivimab** and **etesevimab** together are unlikely to be active against variants from this lineage.

[d] Not all isolates of the New York lineage harbor the E484K substitution (as of February 2021).

According to the FDA comment, given the similarities between the substitutions in B.1.351 and P.1, it is unlikely that **bamlanivimab** and **etesevimab** together will be active against these variants. *Regeneron's* mAb combination of **casirivimab** with **imdevimab** showed the least reduction in susceptibility against the variants (Table 3).

Table 3. Pseudovirus Neutralization Data for SARS-CoV-2 Variant Substitutions with Casirivimab and Imdevimab Together[3]

Lineage with Spike Protein Substitution	Key Substitutions Tested	Fold Reduction in Susceptibility
B.1.1.7 (UK origin)	N501Y[a]	no change[c]
B.1.351 (South Africa origin)	K417N + E484K + N501Y[b]	no change[c]
P.1 (Brazil origin)	K417T + E484K	no change[c]
B.1.427/B.1.429 (California origin)	L452R	no change[c]
B.1.526 (New York origin)[d]	E484K	no change[c]

[a] Pseudovirus expressing the entire variant spike protein was tested. The following changes from wild-type spike protein are found in the variant: del69-70, del145, N501Y, A570D, D614G, P681H, T716I, S982A, D1118H.

[b] Pseudovirus expressing the entire variant spike protein was tested. The following changes from wild-type spike protein are found in the variant: D80Y, D215Y, del241-243, K417N, E484K, N501Y, D614G, A701V.

[c] No change: <2-fold reduction is susceptibility.

[d] Not all isolates of the New York lineage harbor the E484K substitution (as of February 2021)

At this time, it is not known how pseudovirus data correlate with clinical outcomes.

Based on findings described above and other additional information, the NIH has recently updated mAB treatment guidelines for COVID-19 (https://www.covid19treatmentguidelines.nih.gov/statement-on-anti-sars-cov-2-monoclonal-antibodies-eua/), and currently recommends:

- Using one of the following combination anti-SARS-CoV-2 monoclonal antibodies to treat outpatients with mild to moderate COVID-19 who are at high risk of clinical progression:
  - **Bamlanivimab 700 mg plus etesevimab 1,400 mg**; *or*
  - **Casirivimab 1,200 mg plus imdevimab 1,200 mg**.
- There are no comparative data to determine whether there are differences in clinical efficacy or safety between **bamlanivimab** plus **etesevimab** and **casirivimab** plus **imdevimab.**
  - There are SARS-CoV-2 variants, particularly those that contain the mutation E484K, that reduce the virus' susceptibility to **bamlanivimab** and, to a lesser extent, **casirivimab and etesevimab** in vitro; however, the **clinical impact of these mutations is not known.**
  - In regions where SARS-CoV-2 variants with reduced in vitro susceptibility to **bamlanivimab plus etesevimab** are common, some NIH Panel members would preferentially use **casirivimab** plus **imdevimab** while acknowledging that it is not known whether in vitro susceptibility data correlate with clinical outcomes.
- Because clinical outcome data are limited and there are concerns regarding decreased susceptibility of variants, the Panel **recommends against** the use of **bamlanivimab monotherapy**.
  - If combination products are not available, the use of **bamlanivimab** monotherapy can be considered for people who meet the EUA criteria on a case-by-case basis.

Missouri healthcare providers and public health practitioners: Please contact your local public health agency or the Missouri Department of Health and Senior Services' (DHSS') Bureau of Communicable Disease Control and Prevention at 573-751-6113 or 800-392-0272 (24/7) with questions regarding this Alert. For information on requesting SARS-CoV-2 variant testing in Missouri, please see the DHSS Health Update "Enhancing Public Health Surveillance for Variant SARSCoV-2 Viruses in Missouri" available at https://health.mo.gov/emergencies/ert/alertsadvisories/pdf/update21921.pdf. For additional information on sewershed testing, please contact the Bureau of Environmental Epidemiology at (573) 751-6102 or visit our sewershed storymap at https://storymaps.arcgis.com/stories/f7f5492486114da6b5d6fdc07f81aacf.

References:

1. https://www.fda.gov/media/143603/download?utm_medium=email&utm_source=govdelivery
2. https://www.fda.gov/media/145802/download?utm_medium=email&utm_source=govdelivery
3. Fact Sheet For Health Care Providers Emergency Use Authorization (Eua) Of Regen Covtm (Casirivimab With Imdevimab) (fda.gov)

Health Advisory:

Emergence of Delta Variant of Coronavirus Causing COVID-19 in USA

06.23.2021

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Health Advisory
06.23.2021

FROM: **Robert Knodell, DHSS Acting Director**

SUBJECT: **Emergence of Delta Variant of Coronavirus Causing COVID-19 in USA**

The Missouri Department of Health and Senior Services (DHSS) is issuing this Health Advisory to provide the latest information regarding the emergence of the Delta variant. The increase in this highly transmissible variant underscores the importance of continued testing for COVID-19 for patients with compatible symptoms, as well as individuals who are not fully vaccinated and have been exposed to SARS-CoV-2 but may be asymptomatic. Social distancing and appropriate masking remain very important countermeasures. Vaccination is the most effective and long-lasting tool for protection from this infection. The DHSS continues to encourage all eligible persons to get vaccinated against COVID-19.

The Delta variant (B.1.617.2, formerly India variant) of COVID-19 causing coronavirus originated and rapidly spread in India, and is emerging in the United States, as well as in many other countries. On June 15, 2021, the CDC named Delta variant a variant of concern (VOC) in the United States. As of mid-June 2021, the CDC estimates the Delta variant is accounting for 20% of new cases in the United States. The variant virus proportions estimate based on the CDC sequence data of human samples shows the highest proportion of cases is in HHS Region 7 (Missouri, Kansas, Iowa, and Nebraska), comprising 34.8% of all variant viruses detected. This is an increase from 1.6% just one month ago. Genetic surveillance of COVID-19 cases by the Missouri DHSS in collaboration with the University of Missouri detected at least one case of Delta virus in 35 counties across all regions of the State. The highest proportion of Delta virus is detected in the Southwest region of the State, which accounts for just over 67% of all Delta variants identified. The ongoing DHSS surveillance of sewage samples, most recently available from 23 wastewater treatment facilities across the state, reveals presence of Delta virus at 16 locations.

Viral mutations naturally occur in the genome of many viruses, including SARS-CoV-2 which causes COVID-19. Unlike the human genome which is slow to mutate, RNA viruses, such as SARS-CoV-2, are able to quickly mutate. Once the mutation occurs, it may alter the viral function (for example, enhance receptor binding), or may have no effect on how virus functions. A new virus variant emerges when the virus develops one or more mutations that differentiate it from the predominant virus variants circulating in a population.

Accumulating data shows that Delta virus may have increased binding with human ACE receptors and increased transmissibility when compared to previously emerged variant viruses. New Public Health England (PHE) research suggests the Delta variant is associated with a 64% increased risk of household transmission compared with the Alpha variant (B.1.1.7, formerly UK variant), and is 40% more transmissible outdoors. Analysis of data from Scotland just published in *The Lancet* indicated that Delta variant approximately doubles the risk of hospitalization compared with the Alpha variant.

Variants of concern, such as Delta virus, may also reduce vaccine effectiveness, which may be evident by a high number of vaccine breakthrough cases or a very low vaccine-induced protection against severe disease. One recent study revealed that Delta variant is 6.8-fold more resistant to neutralization by sera from COVID-19 convalescent and mRNA vaccinated individuals. A pre-print study released by PHE on May 22, 2021 found that two doses of the Pfizer-BioNTech vaccine were 88% effective against symptomatic infection with the Delta variant versus 93.4% for the Alpha variant. However, one dose was only 33% effective against symptomatic infection with the Delta variant versus 50% for the Alpha variant. The PHE data also shows the Pfizer/BioNTech vaccine is 96% effective against hospitalization, after two doses, in those who experience Delta virus infection. These new findings underscore importance of receiving two doses of COVID-19 vaccination and adhering to the typical regimen of injections.

Clinical knowledge regarding differences in symptoms caused by the Delta virus infection is currently limited. According to the patient data from the UK where the Delta variant now accounts for 91% of the Covid-19 cases, disease caused by this variant may not present in typical fashion with cough and fever. An ongoing U.K.-based study (Zoe Covid Symptom Study) enables public to enter their COVID symptoms on a smartphone application for the scientists to then analyze the data.

Analysis of such data shows that top symptoms of Delta variant infection are headache, followed by runny nose and sore throat, while fever and cough were less common; loss of smell was not in the top ten. Most cases were in young people who had not yet been vaccinated, and that the variant appeared to be far more transmissible with every person infecting several others. Implication of such findings is that infected persons may not perceive themselves as having COVID-19 symptoms and not seek health care accordingly, and health providers may not pursue an appropriate testing.

The Missouri DHSS urges health care providers and the public to be vigilant for the possibility of Delta virus infection. Social distancing and appropriate masking remain very important countermeasures. Vaccination is the most effective and long-lasting tool for protection from this infection. The DHSS continues to encourage all eligible persons to get vaccinated against COVID-19.

Missouri healthcare providers and public health practitioners: Please contact your local public health agency or the Missouri Department of Health and Senior Services' (DHSS') Bureau of Communicable Disease Control and Prevention at 573-751-6113 or 800-392-0272 (24/7) with questions regarding this health advisory.

Health Advisory:

National Pause for the Distribution and Utilization of Bamlanivimab and Etesevimab for the Treatment of Mild to Moderate COVID-19

06.30.2021

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Health Advisory
06.30.2021

FROM: **Robert Knodell, DHSS Acting Director**

SUBJECT: **National Pause for the Distribution and Utilization of Bamlanivimab and Etesevimab for the Treatment of Mild to Moderate COVID-19**

The Missouri Department of Health and Senior Services (DHSS) received important prescribing information from Eli Lilly, manufacturer of bamlanivimab and etesevimab. Content of Lilly's notification is repeated below and can also be found at https://www.covid19.lilly.com/assets/pdf/bam-ete/bam-ete-pause.pdf

The Assistant Secretary for Preparedness and Response and the Food and Drug Administration (FDA) have paused the distribution of bamlanivimab and etesevimab across all 50 states within the United States effective 25 June 2021 due to reduced effectiveness against certain specific viral variants. As a result, do not use bamlanivimab and etesevimab administered together at this time. Use other authorized monoclonal antibodies to treat patients with mild to moderate COVID-19. Importantly, the pause of bamlanivimab and etesevimab distribution and use is not due to any new safety concerns.

The Centers for Disease Control and Prevention has identified that the combined frequencies of the P.1 (Gamma) variant (first identified in Brazil) and the B.1.351 (Beta) variant (first identified in South Africa) throughout the United States now exceeds 11% and is trending upward (https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/variant-proportions.html). Results from in vitro assays that are used to assess the susceptibility of viral variants to particular monoclonal antibodies suggest that bamlanivimab and etesevimab administered together are not active against either the P.1 (Gamma) or B.1.351 (Beta) variants. These assays use "pseudotyped-virus-like particles" that help determine likely susceptibility of the live SARS-CoV-2 variant viruses.

The duration of this pause will be determined in close coordination with the FDA and US government. If you have bamlanivimab and etesevimab at your facility, you do not need to dispose of these drugs at this time.

Healthcare providers should direct questions about bamlanivimab and etesevimab to Eli Lilly and Company at 1-855-LillyC19 (1-855-545-5921). Additional information on the use of bamlanivimab and etesevimab together, including the authorized Bamlanivimab and Etesevimab Fact Sheet for Healthcare Providers, can be found at www.BAMandETE.com.

Reporting Adverse Events:

Per the requirements for bamlanivimab and etesevimab administration under the Emergency Use Authorization (EUA), healthcare providers are responsible for mandatory reporting of all medication errors and serious adverse events potentially related to bamlanivimab and etesevimab treatment. Refer to the Fact Sheet and www.BAMandETE.com for detailed instructions.

Missouri healthcare providers and public health practitioners: Please contact your local public health agency or the Missouri Department of Health and Senior Services' (DHSS') Bureau of Communicable Disease Control and Prevention at 573-751-6113 or 800-392-0272 (24/7) with questions regarding this health advisory.

Health Advisory:

Observed Interseasonal Respiratory Syncytial Virus Surge in Missouri

07/06/2021

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Health Advisory
07/06/2021

FROM: **Robert Knodell, DHSS Acting Director**

SUBJECT: **Observed Interseasonal Respiratory Syncytial Virus Surge in Missouri**

On June 10th CDC issued a health advisory to notify clinicians and caregivers about increased interseasonal respiratory syncytial virus (RSV) activity across parts of the Southern United States.

Each year in the United States RSV leads, on average to approximately 2.1 million outpatient visits and 58,000 hospitalizations with 100-500 deaths among children younger than 5 years old, and 177,000 hospitalizations and 14,000 deaths among adults 65 years and older.

Missouri is experiencing a similar, unexpected off-season surge in RSV cases. According to national RSV surveillance data, as well as data from Missouri's children's hospitals across the state, the increase in RSV cases continues statewide. Infection rates are currently comparable to the regular RSV season levels seen in previous years. Typically, the RSV season onset ranges from mid-September to mid-November; peak season ranges from late-December to mid-February, and season offset ranges from mid-April to mid-May in most of the country.

Missouri DHSS recommends extending monthly preventive palivizumab for infants at risk for severe RSV disease in order to ensure continued protection during this unexpected surge. Since the duration of this surge cannot be predicted, extension of the palivizumab preventive treatment coverage for the period of July-August, 2021 is indicated.

CDC encourages broader testing for RSV among patients presenting with acute respiratory illness who test negative for SARS-CoV-2, the virus that causes COVID-19. RSV can be associated with severe disease in young children and older adults. This health advisory also serves as a reminder to healthcare personnel, childcare providers, and staff of long-term care facilities to avoid reporting to work while acutely ill – even if they test negative for SARS-CoV-2.

Additional recommendations include:

1. Clinicians and caregivers should be aware of the typical clinical presentation of RSV for different age groups.
2. Clinicians should consider testing patients with a negative SARS-CoV-2 test and acute respiratory illness or the age-specific symptoms presented above for non-SARS-CoV-2 respiratory pathogens, such as RSV. Real-time reverse transcription-polymerase chain reaction (rRT-PCR) is the preferred method for testing for respiratory viruses.
3. Clinicians should report laboratory-confirmed RSV cases and suspected clusters of severe respiratory illness to local and state health departments according to their routine reporting requirements. ONLY outbreaks are reportable in Missouri.
4. Healthcare personnel, childcare providers, and staff of long-term care facilities should avoid reporting to work while acutely ill – even if they test negative for SARS-CoV-2.
5. Clinicians can review weekly updates to the NREVSS website and refer to surveillance data collected by local hospitals and health departments for information on RSV circulation trends in their area.

Missouri healthcare providers and public health practitioners: Please contact your local public health agency or the Missouri Department of Health and Senior Services' (DHSS') Bureau of Communicable Disease Control and Prevention at 573-751-6113 or 800-392-0272 (24/7) with questions regarding this Advisory.

Health Advisory:

SARS-CoV-2 Monoclonal Antibody Treatment Update

Date July 27, 2021

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Health Advisory
July 27, 2021

FROM: **Robert Knodell, DHSS Acting Director**

SUBJECT: **SARS-CoV-2 Monoclonal Antibody Treatment Update**

The Missouri Department of Health and Senior Services (DHSS) is providing this updated advisory regarding monoclonal antibody treatment for COVID-19. Previously, DHSS issued a Health Advisory on April 13, 2021 about such treatment options. The April 13 health advisory detailed Eli Lilly's bamlanivimab and bamlanivimab plus etesevimab combo. Since then, U.S. health officials have paused the distribution of those two Eli Lilly & Co. Covid-19 monoclonal antibody treatments because of data showing that they aren't effective against virus variants that are common across the country. There are two remaining options for monoclonal antibody based treatment, each exists under an Emergency Use Authorization, Regeneron's product consisting of casirivimab and imdevimab, and GSK's sotrovimab.

Each treatment has similar emergency use and restriction guidance:

- for the treatment of mild-to-moderate coronavirus disease 2019 (COVID-19) in adults and pediatric patients (12 years of age and older weighing at least 40 kg),
- with positive results of direct SARS-CoV-2 viral testing, AND
- who are at high risk for progression to severe COVID-19, including hospitalization or death.

Each product is not authorized for use in patients:

- who are hospitalized due to COVID-19, OR
- who require oxygen therapy due to COVID-19, OR
- who require an increase in baseline oxygen flow rate due to COVID-19 (in those on chronic oxygen therapy due to underlying non-COVID-19 related comorbidity).

To date, each treatment has been indicated to be effective against known COVID-19 causing SARS-CoV2 variants in circulation, including the Delta variant.

Full details on the EUA for GSK's sotrovimab are found at https://www.fda.gov/media/149534/download and EUA information for Regeneron's casirivimab and imdevimab is at https://www.regeneron.com/downloads/treatment-covid19-eua-fda-letter.pdf.

Missouri healthcare providers and public health practitioners: Please contact your local public health agency or the Missouri Department of Health and Senior Services' (DHSS') Bureau of Communicable Disease Control and Prevention at 573-751-6113 or 800-392-0272 (24/7) with questions regarding this Health Advisory.

Health Advisory:

Vigilance for Measles and Polio

September 3, 2021

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Health Advisory
September 3, 2021

FROM: **DONALD KAUERAUF, DHSS DIRECTOR**

SUBJECT: **Vigilance for Measles and Polio**

DHSS is providing this information below as previously shared by CDC. For questions or concerns please contact your local public health agency or the Missouri Department of Health and Senior Services' (DHSS') Bureau of Communicable Disease Control and Prevention at 573-751-6113 or 800-392-0272 (24/7) with questions regarding this Health Advisory.

In the setting of the Afghanistan evacuation, individuals from Afghanistan are being resettled across the U.S.

Afghanistan ranks 7th in the world for measles cases, with a current outbreak, and is one of only two countries with both wild and vaccine-derived poliovirus in circulation. It also has low routine immunization coverage, including for measles-containing vaccine (MCV) and inactivated polio vaccine (IPV). Therefore, all persons entering the United States with a humanitarian parolee status[1] aged ≥6 months to 64 years (born in or after 1957) are required to receive one dose of measles, mumps, and rubella (MMR) vaccine, and those ≥6 weeks of age are required to receive one dose of IPV, within seven days of being granted parole in the United States, unless already received overseas before arrival or medically contraindicated.

Many of those arriving from Afghanistan are choosing to have their documents processed at military bases in the United States supporting this operation, before traveling to their final destinations in the United States. The military bases will be providing these vaccinations free of charge. Thus, efforts are being made to deliver and document receipt of these vaccinations as soon as possible after arrival. However, clinicians should remain vigilant for signs and symptoms of measles or polio among those arriving from Afghanistan.

Clinicians are urged to contact their local or state health department if suspected cases of paralytic polio or measles are detected.

Please distribute widely to all primary care providers and subspecialists, as well emergency and urgent care facilities and microbiology laboratories. This notice provides the following:

- Review of the typical symptoms for measles and polio
- Recommendations for prompt specimen collection and subsequent testing
- Recommendations for vaccination of arrivals

Vigilance for suspect cases of measles and poliomyelitis

Measles:

CDC advises clinicians to maintain vigilance for measles and send information about all patients that are suspected of having measles or meet the clinical criterion for measles (generalized maculopapular rash lasting ≥3 days, fever ≥38.3°C, and cough, coryza, or conjunctivitis) IMMEDIATELY to their local or state health department. Measles case definition

Measles cases should be reported promptly (within 24 hours) by the state health department to the CDC, directly to the domestic measles team at NCIRD/CDC by telephone (404-639-6247) or by e-mail (measlesreport@cdc.gov) or to the CDC Emergency Operations Center by telephone (770-488-7100).

Recommendations for specimen collection and testing

CDC advises clinicians to collect specimens from patients suspected of having measles as early as possible in the course of illness. Efforts should be made to obtain a serum sample for detection of measles-specific IgM antibody and a throat (oropharyngeal, OP) swab (or nasopharyngeal swab) for detection of measles RNA by real-time RT-PCR from suspected cases at first contact. Testing should be expedited and coordinated with state and local health departments and CDC.

Paralytic polio:

CDC advises clinicians to maintain vigilance for acute flaccid weakness or paralysis that might indicate a case of poliomyelitis due to poliovirus and send information about all patients that meet the clinical criterion for poliomyelitis (acute onset of flaccid paralysis of one or more limbs with decreased or absent tendon reflexes in the affected limbs, without other apparent cause) IMMEDIATELY to their local or state health department. **Polio case definition**

Paralytic polio has been classified by CSTE as "immediately notifiable, extremely urgent," which requires that local and state health departments contact CDC within 4 hours (Emergency Operations Center, 770-488-7100). Case notifications should not be delayed because of incomplete information or lack of confirmation; they can be updated as more information becomes available.

Recommendations for specimen collection and testing

CDC advises clinicians to collect specimens from patients suspected of having infection with poliovirus as early as possible in the course of illness. Specimens include:

- Appropriate stool (whole stool) and throat specimens (OP swab) (2 stool specimens taken at least 24 hours apart and 2 throat specimens taken at least 24 hours apart during the first 14 days after onset of paralytic disease) should be collected.

CDC will provide poliovirus testing of stool and throat specimens to rule out the presence of poliovirus: https://www.cdc.gov/polio/what-is-polio/lab-testing/specimens.html

Health departments may contact CDC for further epidemiologic and laboratory support by email at AFMinfo@cdc.gov or Picornalab@cdc.gov, or by phone through the CDC Emergency Operations Center (770-488-7100).

Additional instructions regarding specimen collection and shipping can be found at:

Measles

Polio

Recommendations for vaccination

Persons arriving from Afghanistan who have received MMR and polio vaccines as described above will receive an official copy of their vaccination record.

However, if clinicians encounter arrivals from Afghanistan who do not have documentation of these vaccines, they should offer MMR and IPV vaccinations as follows:

One dose of MMR vaccine for all aged ≥6 months to 64 years (born in or after 1957, and unless medically contraindicated), ideally within 7 days of U.S. entry. A first MMR dose between 6-11 months should be followed by the standard ACIP schedule with doses at 12-15 months and 4-6 years.

One dose of IPV for all aged ≥6 weeks of age (including adults), ideally within 7 days of U.S. entry (unless medically contraindicated). This initial dose should be followed by the standard ACIP schedule with doses at 2, 4, and 6-18 months, and 4-6 years.

Children who start the MMR or IPV series late can follow the catch-up immunization schedule [link].

Arrivals *with* official documentation of measles and polio vaccination should continue the recommended ACIP routine or catch-up schedule.

As the Afghanistan evacuation situation remains fluid, CDC will continue to monitor, and will update partners with any changes in guidance.

For more information:

https://www.cdc.gov/polio/index.htm

https://www.cdc.gov/measles/index.html

Health Advisory:

Mercury Spills in the St Louis Area

December 8, 2021

This document will be updated as new information becomes available. The current version can always be viewed at http://www.health.mo.gov.

The Missouri Department of Health and Senior Services (DHSS) is now using four types of documents to provide important information to medical and public health professionals, and to other interested persons.

Health Alerts convey information of the highest level of importance which warrants immediate action or attention from Missouri health providers, emergency responders, public health agencies, and/or the public.

Health Advisories provide important information for a specific incident or situation, including that impacting neighboring states; may not require immediate action.

Health Guidances contain comprehensive information pertaining to a particular disease or condition, and include recommendations, guidelines, etc. endorsed by DHSS.

Health Updates provide new or updated information on an incident or situation; can also provide information to update a previously sent Health Alert, Health Advisory, or Health Guidance; unlikely to require

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Health Advisory
December 8, 2021

FROM: **DONALD KAUERAUF, DHSS DIRECTOR**

SUBJECT: **Mercury Spills in the St. Louis Area**

Recently, two separate mercury spills have been reported in the St. Louis area (St. Charles county and St. Louis City). In both instances, mercury was spilled in a residential setting and further tracked or taken to other residential properties, and thus impacted those properties.

Residents of those homes have been tested for mercury poisoning, and some of the impacted individuals required treatment and hospitalization after showing symptoms of mercury toxicity. In all, nine school settings were evaluated to determine if mercury had been tracked to them. No mercury levels requiring remediation were found in schools.

The U.S. Environmental Protection Agency (EPA) and Missouri Department of Natural Resources (DNR) have completed investigation of these spill and no additional individuals exposed from these events are expected to present for medical care. However, these two events provide examples that mercury spills are still possible and should remain a consideration when patients present with mercury exposure symptoms.

These particular spill scenarios involved elemental mercury, the silver-gray metal used in some thermometers, thermostats, fluorescent lamps, among other things. The nervous system is very sensitive to this type of mercury. Inhaling elemental mercury vapors is more of an exposure concern than dermal or ingestion routes. There are several reasons for why this occurs: elemental mercury in its liquid form is poorly absorbed, elemental mercury produces mercury vapors at room temperature which are readily absorbed through mucous membranes in the lungs, and elemental mercury is highly diffusible and able to pass through cell membranes and blood-brain barriers. The symptoms described below are all associated with the inhalation exposure route.

According to the Agency for Toxic Substances and Disease Registry (ATSDR), “Inhalation of high concentrations of elemental mercury vapor may rapidly produce cough, dyspnea, chest pain, nausea, vomiting, stomatitis, diarrhea, fever, and a metallic taste in the mouth.” ATSDR also has found that eye irritation and vision problems are possible. Children younger than 30 months are particularly vulnerable and at an increased risk for pulmonary toxicity. Exposures to large amounts of mercury can happen suddenly because mercury vaporizes rapidly into the air. For chronic exposures, ATSDR states “Chronic exposure primarily affects the central nervous system. Chronic exposure produces a classic triad of tremor, gingivitis, and erethism (insomnia, excessive shyness, and emotional lability). Other psychological findings include headache, short-term memory loss, and anorexia. Fine tremors in the fingers, eyelids, and lips are early signs of mercury toxicity.” These symptoms may progressively evolve to more severe symptoms such as depression, significant tremors, and severe nervous system disturbances as mercury accumulates in the body over time. A decreased kidney function and signs of inflammation may be indicative of higher levels of mercury accumulation. However, some individuals with high mercury levels may not exhibit symptoms.

Both urine and blood can be tested to confirm mercury exposure. Urine tests are the most appropriate, and can be used to diagnose both acute and chronic exposures. Any urine measurement above 2 micrograms/liter is considered elevated above the background level. Mercury has a short lifespan in blood, so tests must be administered within three days of exposure. The 95th percentile of blood mercury level in the United States is 5 micrograms/liter.

Low level exposures to mercury may not need to be treated if no symptoms are exhibited as mercury exits the body on its own by urination. The half-life of elimination for whole body mercury is estimated at 60 to 90 days. Individuals with severe symptoms may need to be hospitalized and receive supportive care and be monitored. In some cases, drug chelation may be appropriate.
For more information, see:

ATSDR's Evaluating Mercury Exposure: Information for Health Care Providers
https://www.atsdr.cdc.gov/mercury/docs/11-229617-b_mercury_508_healthcare_providers.pdf

ATSDR's Mercury Quick Facts for School Nurses
https://www.atsdr.cdc.gov/mercury/docs/11-229617-H-508_SchoolNurse.pdf

Missouri Department of Natural Resources Bulletin
https://content.govdelivery.com/accounts/MODNR/bulletins/2fd1364

Missouri healthcare providers and public health practitioners: Please contact the Missouri Department of Health and Senior Services' (DHSS') Bureau of Environmental Epidemiology at 573-751-6102 with questions regarding this health advisory.